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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/828,637	04/20/2004	Charles Lynn Chidester	14374.54	5324

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EXAMINER

THOMAS, COURTNEY D

ART UNIT	PAPER NUMBER
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2882

DATE MAILED: 08/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/828,637

Applicant(s)

CHIDESTER, CHARLES LYNN

Examiner

Courtney Thomas

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 07 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 3-11, 15, 17, 25 and 30-34 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 3-10 and 30-32 is/are allowed.
- 6) ☒ Claim(s) 11, 17, 25, 33 and 34 is/are rejected.
- 7) ☒ Claim(s) 15 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 04.05.06 has been entered.

### ***Allowable Subject Matter***

2. The indicated allowability of claims 25 and 34 is withdrawn in view of the newly discovered reference(s) to Hoegler et al. (U.S. Patent 4,959,585) and Sommerer (U.S. Patent 5,907,595). Rejections based on the newly cited reference(s) follow.

### ***Claim Objections***

3. Claims 11, 15 and 34 are objected to because of the following informalities:

4. Claim 11, lines 8-11 and 15-18 appear to be redundant.

5. Claim 34, lines 7-10 recite a slot having a substantially constant or variable cross-sectional area along the length of the slot. The limitation appears circular and would likely be better described relative to the filament disposed within the slot, rather than the slot itself (see also claim 15)

6. The claims have not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the claims.

7. Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 11, 17 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sommerer (U.S. Patent 5,907,595) in view of Hoegler et al. (U.S. Patent 4,959,585).

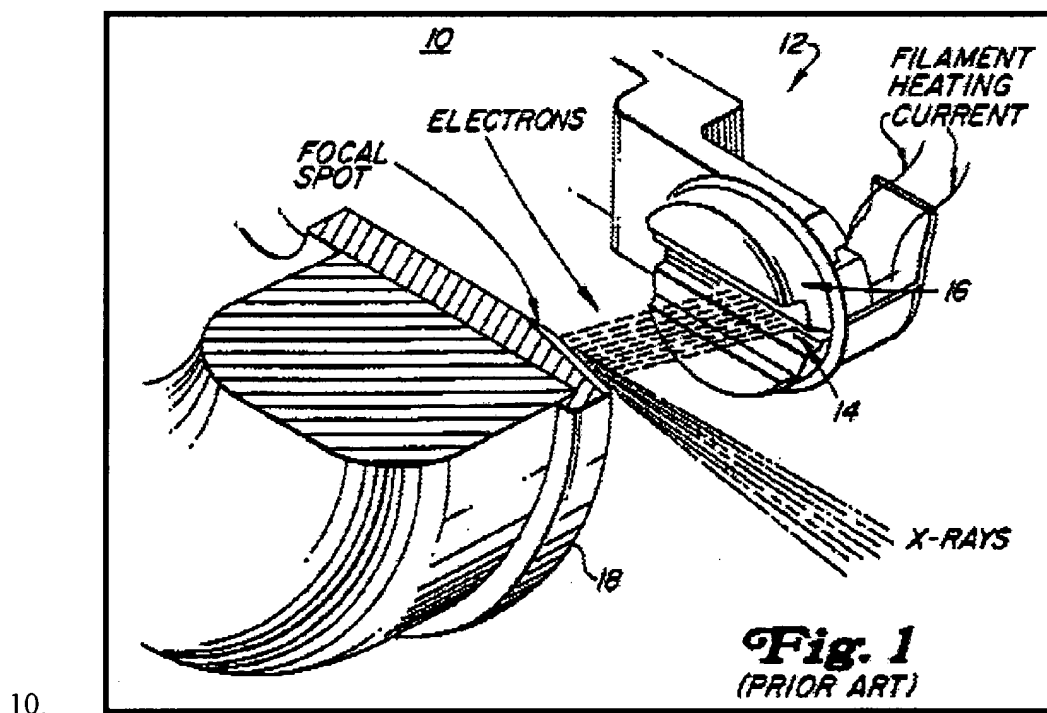
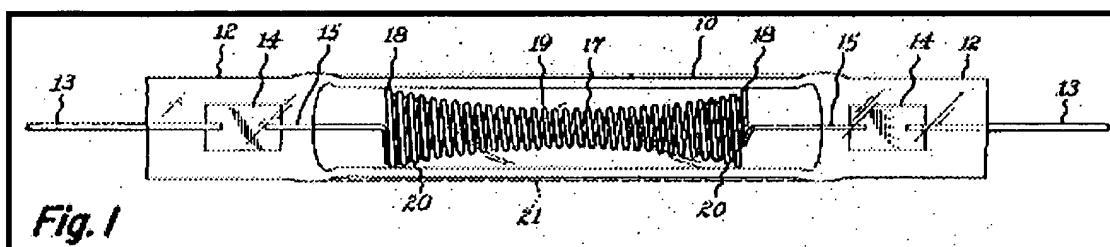


Figure 1 – Cathode assembly – U.S. Patent 5,907,595 to Sommerer

11. As per claims 11 and 17, Sommerer discloses a cathode assembly (and corresponding method) comprising a base (not numbered, see Fig. 1 above) a cathode cup (16) attached to the base portion, the cathode cup including at least two walls which cooperate to at least partially define a slot (see Fig. 1 above); a filament (14 – column 3, lines 62-67) disposed substantially

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within a slot. [Examiner note: The corresponding method is illustrated in Fig. 1 above] Sommerer does not explicitly disclose the filament as being a helically wound wire whose diameter varies along a longitudinal axis defined by the filament, the variances in diameter being substantially symmetrically arranged with respect to a predetermined location on the longitudinal axis. [Examiner note: the missing structural limitation noted above, corresponds to the method step of heating the filament in such a way that portions of the filament are at a relatively higher temperature than other portions of the filament].



12.

Figure 1 – Filament – U.S. Patent 4,959,585 to Hoegler et al.

13. Hoegler et al. disclose a filament (17); a helically wound wire whose diameter varies along a longitudinal axis defined by the filament, the variances in diameter being substantially symmetrically arranged with respect to a predetermined location on the longitudinal axis (see Fig. 1 above). Hoegler et al. teach that such construction enables physical engagement with an electrical connecting portion, while providing support for the filament; as well as controlling irradiation parameters via filament diameter (see also Figs. 1a, 1b, 3 and 5, not shown above; column 7, lines 25-50).

14. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the cathode assembly of Sommerer such that it incorporated the filament of Hoegler et al. One would have been motivated to make such a modification for the purpose of providing a filament that enables physical engagement with an electrical connecting

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portion, while providing support for the filament; as well as controlling irradiation parameters via filament diameter, as taught by Hoegler et al. (column 7, lines 25-50).

15. **As per claim 33**, Sommerer as modified above, discloses a cathode assembly wherein the predetermined location comprises a location proximate a center of the filament.

16. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hoegler et al. (U.S. Patent 4,959,585) in view of Sommerer (U.S. Patent 5,907,595).

17. **As per claim 34**, Hoegler et al. disclose a filament as recited in claim 25 (see below), but do not explicitly recite a filament further comprising an element of a cathode assembly that includes a base and cathode cup, including two walls which cooperate to at least partially define a slot, the filament being at least partially disposed within the slot and the slot having a substantially constant cross-sectional area along a length of the slot.

18. Sommerer discloses a cathode assembly comprising a base (not numbered, see Fig. 1 above) a cathode cup (16) attached to the base portion, the cathode cup including at least two walls which cooperate to at least partially define a slot (see Fig. 1 above); a filament (14 – column 3, lines 62-67) disposed substantially within a slot; and the slot having a substantially constant cross-sectional area along a length of the slot. Sommerer teaches such construction as facilitating a support structure for a filament within an X-ray tube.

19. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Hoegler et al. such that it incorporated a cathode assembly of Sommerer. One would have been motivated to make such a modification for the purpose of providing a support structure for a filament within an X-ray tube, as taught by Sommerer (see Fig. 1 above).

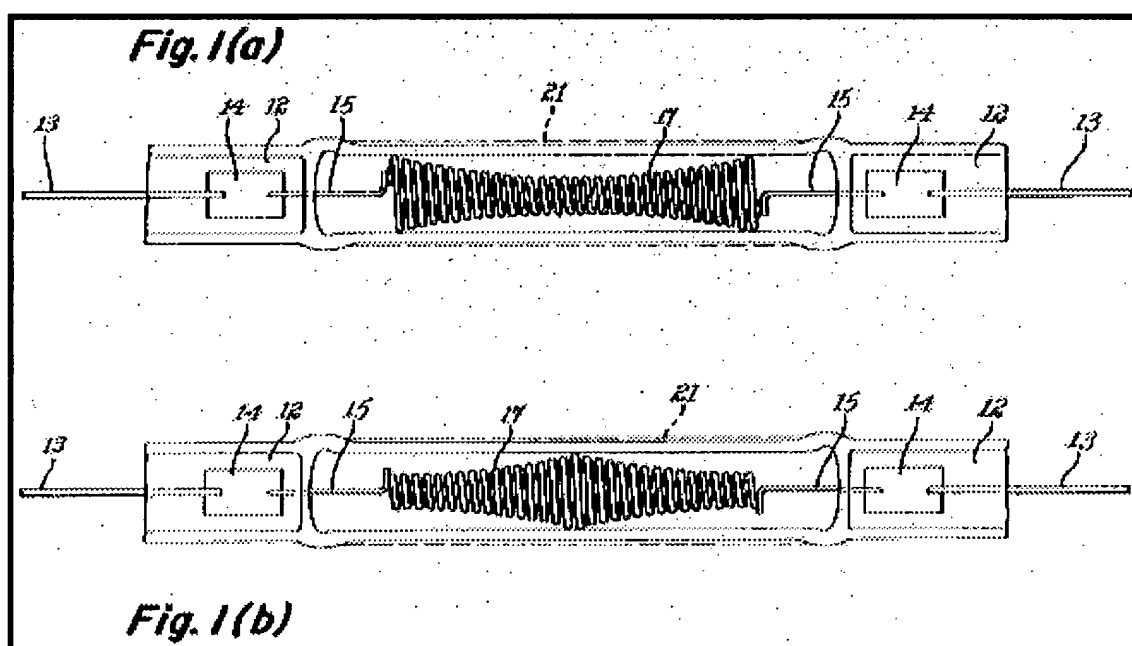
***Claim Rejections - 35 USC § 102***

20. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

21. Claim 25 is rejected under 35 U.S.C. 102(b) as being anticipated by Hoegler et al. (U.S. Patent 4,959,585).



22.

**Figures 1a & 1b – Filaments – U.S. Patent 4,959,585 to Hoegler et al.**

23. As per claim 25, Hoegler et al. disclose a filament comprising: a wire (17) wound into successive coils to form a helix, the helix comprising a middle portion and first and second end portions, wherein at least one group of properties varies along at least a portion of a longitudinal length of the filament, the group consisting of wire diameter, pitch (see Figs. 3 & 5, not shown above) filament diameter and wherein the wire diameter is greatest in the middle portion of the

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helix; and a first and second electrical leads (15), the first and second lead being attached to the first end portion of the helix and the second electrical lead being attached to the second end portion of the helix.

*Allowable Subject Matter*

24. Claims 3-10 and 30-32 are allowed.

25. The following is a statement of reasons for the indication of allowable subject matter:

26. **As per claim 3 and dependent claims 4-10 and 30-32**, the examiner found no reference in the prior art that disclosed or made obvious an X-ray tube comprising: a filament and a cathode cup including two walls which cooperate to at least partially define a slot wherein the filament is at least partially disposed, a distance between the filament and the at least one wall varying along at least a portion of the longitudinal length of the filament, and the distance between said filament and at least one of the at least two walls being at a minimum proximate a middle portion of the filament, as recited in independent claim 3.

27. Claim 15 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

28. As per claim 15, the examiner found no reference in the prior art that disclosed or made obvious a cathode assembly, wherein the slot at least partially defined by the walls of the cathode cup has a cross sectional area that varies along at least a portion of a length of the slot.

*Response to Arguments*

29. Applicant's arguments with respect to claims 3-11, 15, 17, 25 and 30-34 have been considered but are moot in view of the new ground(s) of rejection.



*Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Courtney Thomas whose telephone number is (571) 272-2496. The examiner can normally be reached on M - F (9 am - 5 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on (571) 272 2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

*Courtney Thomas*

Courtney Thomas  
Primary Examiner  
Art Unit 2882